

REMARKS

Claims 1-124 were filed with the original application, and claims 59-62 and 121-124 are withdrawn due to restriction. Claims 1-58 and 63-120 stand rejected. By this Amendment, claims 1-58, 65 and 72 are cancelled, without prejudice, and claims 63, 69, 76, 89 and 95 are amended. Upon entry of this Amendment, claims 63, 64, 66-71 and 73-120, of which claim 63 is independent, will be pending, and are presented for reconsideration. Applicants submit that no new matter is introduced by the amendments, and that claims 63, 64, 66-71 and 73-120 are in condition for allowance.

Amendments to the Claims

Independent claim 63 is amended to include features of original claim 72, now canceled, and to require that that 'x%' is greater than or equal to 50%, as supported, for example, by original claims 66 and 67.

Claims 69, 76, 89 and 95 are amended to correct an error in antecedent basis.

Accordingly, Applicants submit no new matter is introduced by the above amendments.

Rejection of Claim 1 Under 35 U.S.C. § 112

Claims 1 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 1 is canceled.

Rejection of Claim 7, 9, 14 and 33 Under 35 U.S.C. § 112

Claims 7, 9, 14 and 33 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 7, 9, 14 and 33 are canceled.

Rejection of Claim 5, 17 and 34 Under 35 U.S.C. § 112

Claims 5, 17 and 34 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 5, 17 and 34 are canceled.

Rejection of Claim 8-48 Under 35 U.S.C. § 112

Claims 8-48 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 8-48 are canceled.

Rejection of Claims 1-9, 14, 63-71 and 76 Under 35 U.S.C. § 103(a)

Claims 1-9, 14, 63-71 and 76 are rejected under 35 U.S.C. § 103(a) over U.S. Patent Application Publication No. 2004/0169137 to Westphall et al. ("Westphall") in view of U.S. Patent No. 5,821,063 to Patterson et al ("Patterson"). Claims 1-9, 14 and 65 are canceled. Applicants respectfully submit that Westphall and Patterson do not teach or suggest all of the features recited by independent claim 63, as amended, for the following reasons.

Westphall alone does not teach or suggest all of the limitations recited by independent claim 63, as amended. For example, Westphall does not teach or suggest estimating systematic errors in respective error bands of determined mass-to-charge ratios of n different species of ions.

Moreover, Applicants respectfully disagree with the assertion in the Office action that Westphall discloses calculating "a respective 'error band' for the determined mass to charge ratio of each of said n different species of ion, as represented by column 3 in Table 1." See Office action, page 8, last line to page 9, line 2. Rather, Westphall merely illustrates the accuracy of Westphall's methods of ion detection by comparing observed mass values to predicted mass values to obtain a percent error; Westphall is silent regarding the likelihood of a repeated measurement having a lesser or a greater error. See Westphall, Table 1, and paragraph 139 (stating that "methods of the present invention are capable of accurately determining the mass of charge [sic] particles.") Westphall is silent about systematic errors in the observed mass values, and is silent about the determination of error bands associated with a probability or confidence of at least 50%, in contrast to the features recited by claim 63. Thus, the error calculation depicted in Table 1 and related portions of the specification do not describe an error band calculation and an associated likelihood of a correct mass value falling within the error band of an observed mass value.

Patterson alone does not teach or suggest all of the features recited by claim 63, as amended. Rather than teaching or suggesting estimating a systematic error, Patterson is directed to the problem of statistical error. Indeed, Patterson teaches that systematic errors are a non-issue with regards to Patterson's methods for sequencing polymers using mass spectrometry; Patterson discloses the use of statistical analysis of mass-spectrometer data in order to calculate experimental errors. See, e.g., Patterson column 19, lines 41-45; see, also, column 19, lines 55-67, stating the following.

This is expected as any systematic errors that are present in the mass assignment of individual peptide peaks ... should cancel out when calculating the mass difference of two adjacent peaks. There are possible systematic components of error that would not be canceled such as incorrect computation of the mass center of one of a set of two adjacent peaks due to partial resolution of the isotopes. This phenomenon was circumvented by the use of a smoothing filter such that all peaks were detected at the actual average mass values.

Moreover, Westphall and Patterson, in combination, do not teach or suggest all of the features recited by independent claim 63, as amended, because neither reference teaches or suggests estimating systematic errors to calculate respective error bands of determined mass-to-charge ratios of n different species of ions. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(b) of claim 63 and its dependent claims 64, 66-71 and 76.

Rejection of Claims 10-13, 15-40, 43-48, 50, 53-58, 72-75, 77-102, 105-110, 112 and 115-120

Under 35 U.S.C. § 103(a)

Claims 10-13, 15-40, 43-48, 50, 53-58, 72-75, 77-102, 105-110, 112 and 115-120 are rejected under 35 U.S.C. § 103(a) over Westphall in view of Patterson, and further in view of any one of U.S. Patent No. 5,300,771 to Labowsky ("Labowsky"), U.S. Patent No. 5,572,022 to Schwartz et al. ("Schwartz"), U.S. Patent Pub. No. 2003/0129657 to Decker et al. ("Decker"), U.S. Patent No. 6,373,052 to Hoyes et al. ("Hoyes"), and U.S. Patent Pub. No. 2005/0006577 to Fuhrer et al. ("Fuhrer"). Claims 10-13, 15-40, 43-48, 50, 53-58 and 72 are cancelled, and independent claim 63 is amended, in part, to include the features of claim 72. For the following reasons, Applicants respectfully submit that independent claim 63 and claims 73-75, 77-102, 105-110, 112 and 115-120, which depend directly or indirectly from claim 63, are not taught or suggested by the cited references, each alone or in any combination.

As described above, Westphall and Patterson do not teach or suggest all of the features recited by claim 63, as amended.

Labowsky alone does not teach or suggest all of the limitations recited by claim 63. Rather, as noted in the Office action, Labowsky teaches that averaging the m/z of several peaks can substantially reduce random errors thereby significantly increasing the confidence in, and precision of, mass assignments. See Office action page 11, bottom paragraph. As also noted in the Office action, and in contrast to the features recited by claim 63, as amended, Labowsky

teaches that this "averaging has no affect on systematic errors." See Labowsky column 1, lines 50-59 (describing how averaging can increase precision, but not necessarily increase accuracy.)

Moreover, the combination of Westphall, Paterson and Labowsky do not teach or suggest all of the features recited by claim 63 because none of these references teach or suggest a method of mass spectrometry that includes the calculation of a respective error band for the determined mass to charge ratio of each of n different species of ion, where the calculation entails estimating systematic errors. Similarly, none of Schwartz, Decker, Hoyes, and Fuhrer remedy this deficiency of Westphall, Paterson, and Labowsky.

Therefore, the cited references, each alone or in any combination, do not teach or suggest all of the features recited by independent claim 63, as amended, or of claims 73-75, 77-102, 105-110, 112 and 115-120, which each depend directly or indirectly from claim 63. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(b) of claims 73-75, 77-102, 105-110, 112 and 115-120.

Conclusion

In view of the amendments and arguments presented herein, Applicants respectfully request that the rejection of claims 63, 64, 66-71 and 73-120, as amended, be reconsidered and withdrawn. The Examiner is invited to call the undersigned, if the Examiner believes that a telephone conversation could be helpful in expediting prosecution of the instant application.

Respectfully submitted,

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